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ABSTRACT

Interest in health promotion has resulted in various programs designed to enhance health and prevent disease through changes in lifestyles. The effects of a widely used stress management program were analyzed in two studies. In the first study, office employees in treatment (N=21) and control (N=24) groups were administered the State-Trait Anxiety Inventory, the Profile of Mood States, the Individual Profile of Stressors, the Stress Locus of Control, and a Job Satisfaction index. Questionnaires were administered before the first stress management session, following the 12-week program, and 12 weeks after the second testing. Physiological scores were also measured. The results revealed that between the first and second testings, treatment subjects improved significantly more than control subjects on measures of trait anxiety, tension, depression, fatigue, confusions, external stress control, and job satisfaction. No significant differences were found between treatment and control groups by the third testing although in many cases both had improved. In the second study, hospital employees (N=87) enrolled in the stress management program completed the five questionnaires used in the first study and the General Well-Being Questionnaire again at three 12-week intervals. Subjects' test scores were found to have improved significantly at the second and third testings as compared to the pre-intervention scores. These findings suggest that the stress management program did produce beneficial changes although the specific reasons for improvement may be difficult to assess. (NB)

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Psychological and Physiological Effects of A Stress Management Program

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Abstract

Effects of a widely used stress management program were analyzed in two studies. The first was given to members of a corporate headquarters on a one-time basis. Psychological and physiological measures were taken and a control group was used. The second, given to hospital employees, used the same psychological measures. The resulting data indicated a continuing beneficial change in the second group that did not occur in the first group. The implications of the results were discussed.

PSYCHOLOGICAL AND PHYSIOLOGICAL EFFECTS OF A STRESS MANAGEMENT PROGRAM

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The recent popularity of health promotion has resulted in a proliferation of programs being offered as effective ways of enhancing health and preventing disease through life style changes. One of the most widely used ways is stress management training. Demonstrating effectiveness of health promotion programs, and particularly stress management programs, has been difficult, and where results have been obtained they usually lack scientific preciseness. In an attempt to systematically measure health status changes resulting from stress management programs two studies were conducted by the St. Louis University Medical Center.

Both studies involved a stress management program, designed over a two-year period by Medical Center experts, that is based on the "whole person" concept emphasizing mental, physical, and emotional modes of appraising and reacting to stressors. Since people use these modes in different ways and to different extents, a variety of techniques are presented so that individuals may determine those most effective for themselves. Positive aspects of stress are also presented; showing how stressors can be beneficial forces in daily life. The program is normally conducted in 90 minute sessions, once a week for twelve weeks; however, modular units make it suitable for varying time periods. A 175 page participant manual containing detailed write-ups of the stress management techniques, as well as conceptual and personal assessment information, is part of the program. Standardization and quality control of trainers occurs through an extensive training program and a 300 page leader's manual. Support materials (film, tapes, etc.) accompany the leader's manual. Prior to the studies, the program and its various versions had been delivered to approximately 20,000 people in over 150 organizations.

The program used for the first study was conducted on a one time basis for members of a corporate headquarters, with the organization making no additional commitments to continue the program for all company employees. A delayed entry control group was used to detect changes attributable solely to conduct of the program. The program for the second study was conducted with the participants' awareness that the organization was committed to making the programs available to all employees on a continual basis. Some members of this second study group were to be used as leaders of later programs. No control group was used in the second study, so its results are presented here to validate trends of the first study. The same trainer from St. Louis University Medical Center was used in both studies.

Study 1

Subjects

Participants in one program were employees in the corporate offices of a department store chain located in a major midwestern city. They volunteered to participate in a stress management program. Most were middle management office workers, but ranged from secretaries to vice-presidents. Useable data was obtained for five males and 16 females with a mean age of 35.7 in the treatment group. In a control group, useable data was obtained for eight males and 16 females with a mean age of 32.0.

Measures

Sixteen scores were obtained from a battery of five questionnaires:

- a. State-Trait Anxiety Inventory (STAI) (Spielberger, Gorsuch, and Lushene, 1970). This is a widely used measure of the state of anxiety and the more enduring trait of anxiety.
- b. Profile of Mood States (POMS) (McNair, Lorr, and Dioppleman, 1971). This is a widely used personality inventory to measure the moods of tension, depression, anger, vigor, fatigue, and confusion.
- c. Individual Profile of Stressors (Note 1). This is a 90 item inventory that measures the vulnerability to stressors grouped into three categories: personal, psychological-social, and physical. An overall stressor index is obtained from a composite of the scores. Scores are on a scale of 1-5, with a higher score indicating less vulnerability.
- d. Stress Locus of Control (Note 2). This is a 15 item inventory that measures the degree to which individuals feel that their stress is under their own control, the control of others, or that there is no systematic control and stress is a chance affair.
- e. Job Satisfaction (Beehr, Walsh, and Taber, 1976). A composite index obtained by summing 21 items.

Eight physiological scores that were hypothesized to be affected by stress were obtained from a standard blood analysis procedure (SMA12): uric acid, cholesterol, total protein, albumin, globulin, heart rate, systolic blood pressure, and diastolic blood pressure.

Procedure

Participants were randomly assigned to two groups. One group acted as a control and did not start the program until 24 weeks after the other group started. Both groups received testing in the same way at the same three times: once before the first session, twelve weeks later after the last session for the experimental group, and twelve weeks after the second testing. Questionnaires were distributed by interoffice mail and collected when the physiological measures were taken. Confidentiality was maintained in all aspects of the study.

Appointments were made for individuals to report to the company clinic where they rested for five minutes before heart rate and blood pressure was measured two times (by two nurses). Then a blood sample was drawn.

Each of the 24 scores for all three testing sessions was analyzed using a 3 X 2 repeated measures analysis of variance (Dixon, 1981). The average of their two measures was used for heart rate and blood pressure.

Results

In the experimental group all of the 24 scores for the second (after) testing showed improvement (in the hypothesized direction) over the first (before) testing scores except for cholesterol and total protein. Eighteen of the third (follow-up) testing scores showed improvement over the first testing scores, and out of those, five were continued improvement over the second testing scores.

Many of the scores improved also for the control group so that for only eight scores did the experimental group improve significantly more than the control group (at the .05 level): trait anxiety, tension, depression, fatigue, confusion, external stress control, job satisfaction, and albumin. The significant improvements were all in the second testing scores which means that at the time of the third testing the experimental and control groups were not significantly different; in many cases both had improved.

These results are summarized in Table 1.

Insert Table 1 about here

Study 2

Subjects

Participants in the other program were employees of a hospital group with five locations in the southern United States. Programs were conducted at each of the five locations for volunteers who were health professionals representing all levels of hospital employees. Useable data was obtained for 37 males and 50 females with a mean age of 43.9.

Measures

Twenty-four scores were obtained from a battery of six questionnaires. Sixteen of the scores came from the same five questionnaires used in Study 1. Eight scores were obtained from the General Well-Being Questionnaire (Wheeler, 1980). This is a 137 item inventory that measures factors that contribute to general well-being in seven areas: emotional, mental, ideological, behavioral, environmental, experiential, and physical. A composite score forms an overall well-being index. Scores are on a scale of 1-5 with a higher score indicating a higher level of well-being. Physiological measurements were not used.

Procedure

As a part of the registration procedure for their stress management program, participants received the questionnaire packet and completed it prior to the first session. After the last session twelve weeks later, the same questionnaire packet was administered a second time. The questionnaires were similarly administered a third time twelve weeks after the last session. Each of the 24 scores for all three testing sessions was analyzed using a repeated measures analysis of variance (Nie and Hull, 1977). Confidentiality was maintained throughout the study.

Results

All 24 scores for the second (after) and third (follow-up) testings showed improvement over the first (before) testing scores, and 12 of the third testing scores showed continued improvement over the second testing scores. Ten of the second testing scores and 11 of the third testing scores were significantly different from the first testing scores at the .05 level. These results are summarized in Table 2.

Insert Table 2 about here

Discussion

The results of Study 1 demonstrated improvement in eight variables that could be attributed to conduct of the stress management program. Seven of these (the questionnaire scores) were validated by also showing improvement in Study 2.

The differences in scores between groups and between people (as indicated by standard deviations not reported here) attest to the complexity of human nature and of the difficulties in measuring changes associated with health promotion programs. A higher degree of variance occurred for the physiological measures than for the questionnaire measures, and where all questionnaire measures showed an improvement at the end of the program, two of the physiological measures changed in a direction contrary to that hypothesized. A consideration of all of the physiological measures together indicates that these contrary changes may be due to normal variation.

The improvement in measures for the control group in Study 1 supports speculation about a "Hawthorne Effect" influence. For many of the participants, having blood drawn seemed to be a big event. And, too, the control group seemed interested in and was anticipating attending the stress management sessions. It does not seem surprising that the conduct of such a program would have a "ripple" effect, because a major factor in stress management is awareness and motivation. Since all participants, experimental and control, were volunteers, it must be assumed some motivation already existed; and the process of completing five questionnaires and being subjected to blood pressure measurement and blood letting must be assumed to heighten awareness about stress information. Nevertheless, the changes in improved health status were real. The fact that in many cases the changes were not observed in the follow-up measures may add support to the "Hawthorne Effect" explanation and to an additional explanation.

The failure of some of the after program improvements for the Study 1 group to be continued for the follow-up measures also could be explained by the fact that the organization has not committed to an on-going program to improve the health status and reduce the effect of stress. Once the program ended and the trainer was no longer present, practicing stress management activities lost their importance. Therefore, it is reasonable to conclude that an organizational commitment to support initial changes through follow-up activities is needed to make lasting changes. Study 2 group showed more lasting effects because the organization made a clear commitment to helping their workers improve their health status by offering the stress management programs on a continuing basis to all employees. Future research should test the relative influence of such organizational variables as the "Hawthorne Effect" and perceived organization support on the short term and long term effectiveness of stress management.

Until future research is completed, it can be concluded that this stress management program did produce beneficial changes, even though the specific reasons for these changes were difficult to assess. Where subjects are average, normally functioning people who desire to enhance their health, a wide variance can be expected in measures. Medical and psychological science have less experience in measuring "wellness" than in measuring illness. Hopefully this shift in emphasis will continue so that improved stress management behaviors can reach more individuals in our society.

Reference Notes

1. Cramer, K. The Individual Profile of Stressors. Developed by the Department of Health Promotion, St. Louis University Medical Center, St. Louis, Missouri, 1980.
2. Munz, D. The Stress Locus of Control Scale. Developed by the Department of Health Promotion, St. Louis University Medical Center, St. Louis, Missouri, 1980.

References

- Beehr, T., Walsh, J., & Tabac, T. Relationship of stress to individually and organizationally valued states of higher order needs as a moderator. Journal of Applied Psychology, 61(1), 1976, 41-47.
- Dixon, W. (Ed). BMDP biomedical computer programs. Berkeley, CA: University of California Press, 1981.
- McNair, D., Lorr, M., & Droppleman, L. POMS manual. San Diego: Educational & Industrial Testing Service, 1971.
- Nie, N. & Hull, H. SPSS batch release 7.0 update manual. University of Kansas, 1978.
- Spielberger, C., Gorsuch, R., & Lushene, R. STAI manual. Palo Alto, CA: Consulting Psychologists Press, 1970.
- Wheeler, R. Factors of well-being (Doctoral dissertation, St. Louis University, 1980). Dissertation Abstracts International, 1981, 42(4), 1593-B.

Table 1
Study 1 Results

Variable	Mean Score			N
	Before	After	Follow Up	
State Anxiety	41.0	36.8	37.4	21
<u>Trait Anxiety</u>	39.2	<u>36.0*</u>	36.8	21
<u>Tension</u>	12.7	<u>8.1*</u>	9.1	21
<u>Depression</u>	9.4	<u>6.2</u>	8.6	21
Anger	7.5	5.6	5.8	21
Vigor	16.3	16.5	X 15.6	21
<u>Fatigue</u>	10.9	<u>6.2*</u>	5.9*	21
<u>Confusion</u>	7.6	<u>5.9</u>	X 8.0	21
Personal Stressors	3.44	3.57*	3.49	18
Psycho-Social Stressors	3.57	3.60	X 3.53	18
Physical Stressors	3.45	3.57*	3.59*	18
Stressor Index	3.49	3.59*	3.52	17
Internal Stress Control	3.17	3.51*	3.43*	21
<u>External Stress Control</u>	2.67	<u>2.35*</u>	2.50	21
Chance Stress Control	2.85	2.60	2.58	21
<u>Job Satisfaction</u>	3.37	<u>3.52</u>	X 3.36	19
Uric Acid	4.8	4.2 *	4.6	21
Cholesterol	178	X191 *	X186	21
Total Protein	7.3	X 7.2	7.4	21
<u>Albumin</u>	4.2	<u>3.9 *</u>	4.1	21
<u>Globulin</u>	3.15	<u>3.35*</u>	3.39*	21
Heart Rate	79.0	78.8	75.5	21
Systolic BP	111.3	110.1	110.3	21
Diastolic BP	70.8	70.6	X 72.5	21
Sex	5 Male	16 Female		21
Age	35.7			21

* Changes significantly different from Before scores at the .05 level.

_ Changes significantly different from control group at .05 level (underlined).

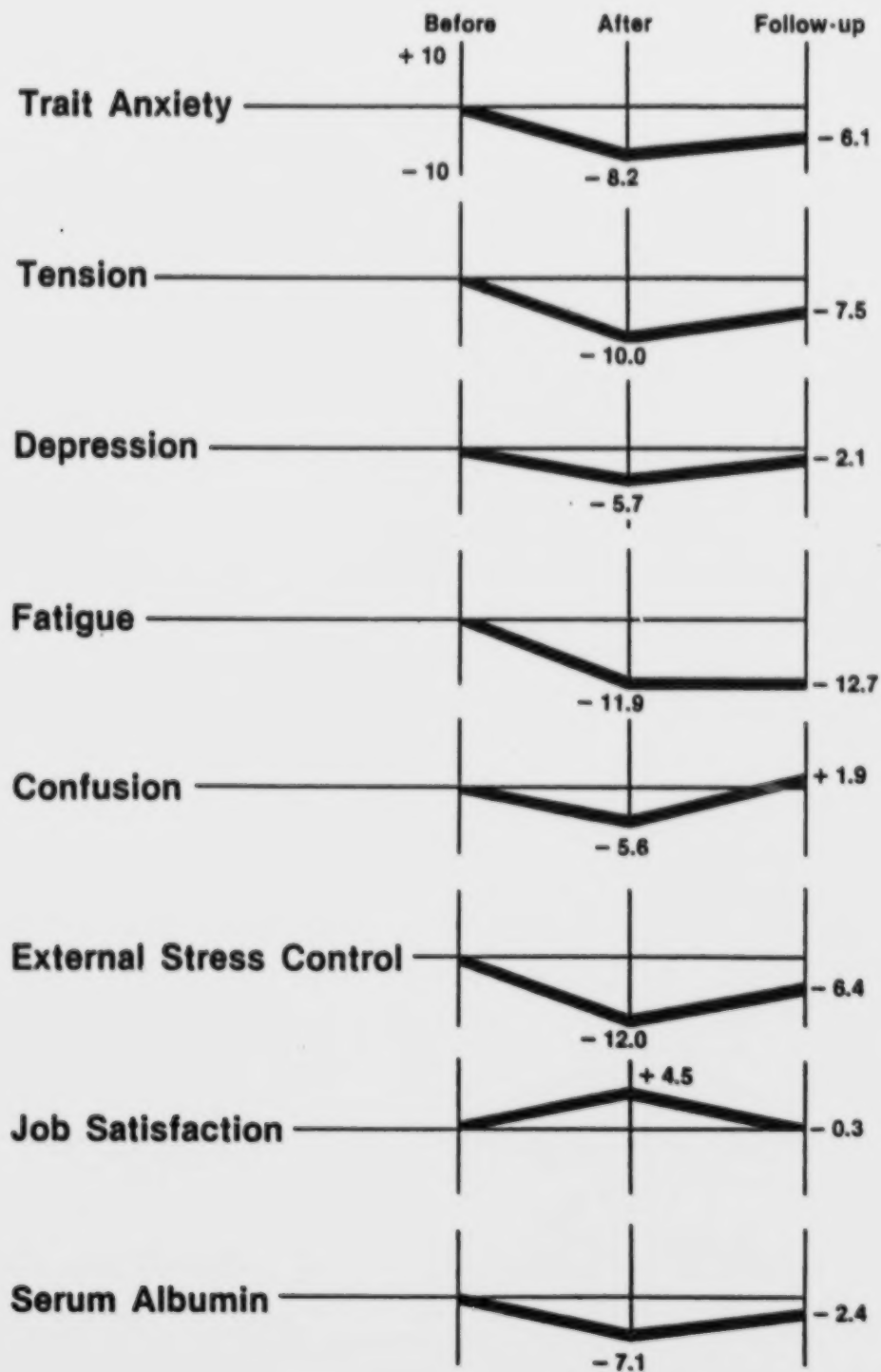
X Changes contrary to hypothesized direction.

Table 2
Study 2 Results

Variable	Mean Score			N
	Before	After	Follow Up	
State Anxiety	34.68	33.96	34.36	85
Trait Anxiety	34.20	33.25	33.00	83
Tension	7.13	6.27	5.74*	85
Depression	6.13	4.58*	4.02*	85
Anger	5.47	5.01	5.01	85
Vigor	17.98	20.44*	19.75*	85
Fatigue	6.53	5.67	5.46	85
Confusion	4.69	4.05	3.94	85
Personal Stressors	3.64	3.79*	3.75*	77
Psycho-Social Stressors	3.70	3.74	3.73	72
Physical Stressors	3.72	3.78	3.80	80
Stressor Index	3.66	3.73*	3.74*	65
Internal Stress Control	3.48	3.71*	3.80*	85
External Stress Control	2.38	2.16*	2.20*	82
Chance Stress Control	2.46	2.25*	2.29*	84
Emotional Well-Being	3.89	3.96	3.97	75
Mental Well-Being	3.52	3.69*	3.64*	80
Ideological Well-Being	3.78	3.84	3.83	77
Behavioral Well-Being	3.83	3.96*	3.95*	79
Environmental Well-Being	3.69	3.72	3.73	82
Experiential Well-Being	4.53	4.54	4.62	82
Physical Well-Being	4.31	4.38	4.40	86
Well-Being Index	3.86	3.93*	3.93*	56
Job Satisfaction	3.62	3.64	3.64	78
Sex	37 Male	50 Female		87
Age	43.9			87

* Changes significantly different from Before scores at the .05 level.

STRESS STUDY I PERCENT CHANGE



STRESS STUDY II PERCENT CHANGE

